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AGENDA AND ATTACHMENTS FROM TECHNICAL REVIEW COMMITTEE MEETING
NUMBER 2 NS GREAT LAKES IL
4/27/1992
TECHNICAL REVIEW COMMITTEE

AGENDA
TECHNICAL REVIEW COMMITTEE MEETING #2
INSTALLATION RESTORATION PROGRAM
NAVAL TRAINING CENTER GREAT LAKES
GREAT LAKES, ILLINOIS
APRIL 27, 1992

1. Welcome aboard
2. Restructuring of Naval Facilities Engineering Command and how it affects the Installation Restoration Program at NTC Great Lakes by Bill Schrock
3. History of the Installation Restoration Program at NTC Great Lakes by Bill Schrock
3. Presentation of the Draft Site Investigation Work Plan for Sites 1, 5 and 7 by Donohue
4. Question and Answer Discussion - Open Forum

**DRAFT
WORK PLAN
SITE INSPECTION FOR SITES 1, 5, AND 7
GREAT LAKES NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS**

**PREPARED BY
DONOHUE & ASSOCIATES, INC.**

**COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN)
PROGRAM**

**CONTRACT NO. N62472-90-D-1298
SUBCONTRACT NO. GCPP-91-001-1298
CONTRACT TASK ORDER 0019**

APRIL 1992



HALLIBURTON NUS
Environmental Corporation

DRAFT

APPENDIX A
ACRONYMS AND ABBREVIATIONS

ACRONYMS AND ABBREVIATIONS

| | |
|-------|---|
| CLP | Contract Laboratory Program |
| CTO | Contract Task Order |
| DOD | Department of Defense |
| DQO | Data Quality Objective |
| FSP | Field Sampling Plan |
| HRS | Hazard Ranking System |
| HSP | Health and Safety Plan |
| IAS | Initial Assessment Study |
| IEPA | Illinois Environmental Protection Agency |
| IR | Installation Restoration |
| MCL | Maximum Contaminant Level |
| MCLG | Maximum Contaminant Level Goal |
| NACIP | Naval Assessment and Control of Installation Pollutants |
| NTC | Naval Training Center |
| PA | Preliminary Assessment |
| PAH | Polynuclear Aromatic Hydrocarbon compounds |
| PCB | Polychlorinated Biphenyl |
| POL | Petroleum, Oil and Lubricants |
| QAPP | Quality Assurance Project Plan |
| QA/QC | Quality Assurance/Quality Control |
| RA | Remedial Action |
| RI/FS | Remedial Investigation/Feasibility Study |
| RPM | Remedial Project Manager |
| RTC | Recruit Training Center |
| SI | Site Inspection |
| SVOC | Semivolatile Organic Compound |
| TAL | Target Analyte List |
| TCL | Target Compound List |
| USACE | U.S. Army Corps of Engineers |
| UST | Underground Storage Tank |
| VA | Veterans Administration |
| VOC | Volatile Organic Compound |

CTO19/GRLKS/WPAD/APR92

**DRAFT WORK PLAN
FOR SITE INSPECTION AT SITES 1, 5, AND 7
GREAT LAKES NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS**

**COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) PROGRAM**

Submitted to:
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Northern Division
Naval Facilities Engineering Command
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Contract No. N62472-90-D-1298
Subcontract No. GCPP-91-001-1298
Contract Task Order No. 0019

APRIL 1992

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**DRAFT WORK PLAN
FOR SITE INSPECTION AT SITES 1, 5, AND 7
GREAT LAKES NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS**

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RP/19WPAD/AA3

1.0 INTRODUCTION

Donohue & Associates, Inc. (Donohue) is submitting this Draft Site Inspection (SI) Work Plan to the U.S. Navy Northern Division (Navy) in response to Contract Task Order (CTO) #0019 under Navy CLEAN Subcontract No. GCPP-91-001-1298 for Prime Contract No. N62472-90-D-1298. Preparation of the Work Plan and the related documents were accomplished pursuant to CTO #0019 for the Great Lakes Naval Training Center (NTC) in Great Lakes, Illinois, dated August 2, 1991. An Implementation Plan was submitted to the Navy on September 4, 1991. The Navy issued the final approval of the Implementation Plan on October 8, 1991.

Great Lakes NTC is located in Shields Township, Lake County, Illinois, on the shore of Lake Michigan. It is bounded on the west by U.S. Route 41 (Skokie Highway), on the east by Lake Michigan, on the north by the City of North Chicago, and on the south by the Veterans Administration (VA) Hospital and the Shore Acres Country Club.

In 1986, the Navy conducted an Initial Assessment Study (IAS) at Great Lakes NTC and identified seven potential hazardous waste sites. Two of the sites identified in the IAS have been eliminated from further study, and two of the sites have already been designated as requiring a Remedial Investigation/Feasibility Study (RI/FS). The remaining three sites will be investigated as part of this Site Inspection (SI) project. These three sites are: Site 1, the Golf Course Landfill; Site 5, the Polychlorinated Biphenyl (PCB) Transformer Boneyard; and Site 7, the Recruit Training Center (RTC) Silk Screen Shop.

This Work Plan presents Donohue's technical scope of work for conducting a Site Inspection (SI) at Great Lakes NTC at the Golf Course Landfill (Site 1), the Transformer Storage Boneyard (Site 5), and the RTC Silk Screen Shop (Site 7). The objective of the SI at Sites 1, 5, and 7 is to determine the presence or absence, as well as the order of magnitude, of specific toxic or hazardous contaminants identified in the IAS and of other contaminants which may be present. Additional data will also be collected for scoring the sites according to the Hazard Ranking System (HRS) (Federal Register, 1990). The results of the SI will include an evaluation of contamination found and site-specific recommendations regarding whether or not to proceed with a RI/FS.

DRAFT

This Work Plan presents site background, the SI objectives and approach, SI tasks, data quality objectives, and the project schedule. The SI at the Golf Course Landfill, the PCB Transformer Boneyard, and the RTC Silk Screen Shop will involve the collection of a minimum of 18 (9 wells, 2 rounds) groundwater samples, 6 (3 samples, 2 rounds) surface water samples, 6 (3 samples, 2 rounds) sediment samples, 14 soil samples, 4 background soil samples, and 6 landfill gas samples. The sampling activities are described in detail in the Field Sampling Plan (FSP). Technical guidelines and procedures for conducting field and laboratory analysis and addressing data quality assurance and quality control are described in the Quality Assurance Project Plan (QAPP). Health and safety protocols are detailed in the Health and Safety Plan (HASp).

RP/19WPAD/AA2

2.0 BACKGROUND

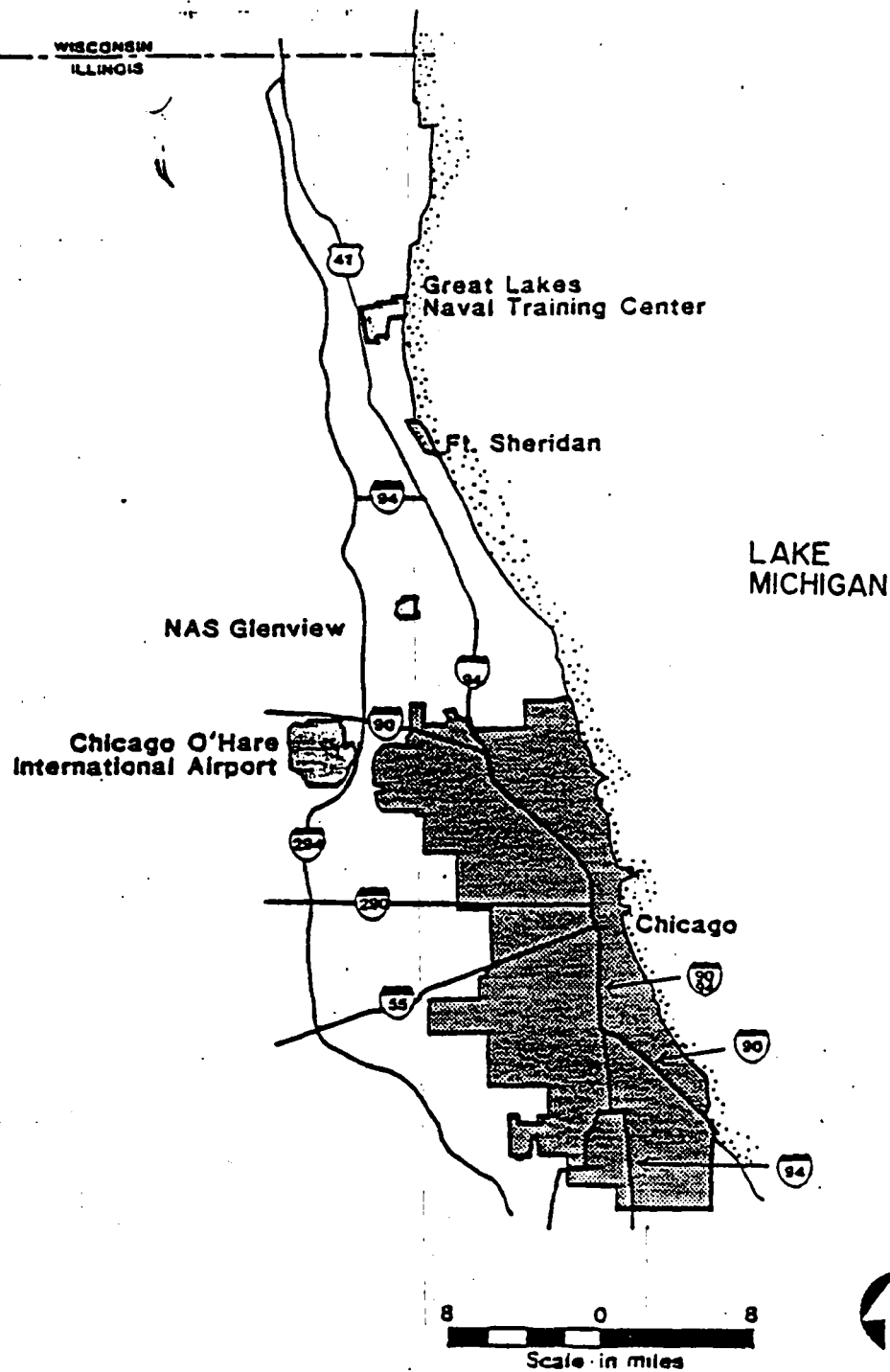
2.1 GREAT LAKES NTC LOCATION

The Great Lakes NTC is located in Shields Township, Lake County, Illinois, on the shore of Lake Michigan. It is bounded on the west by U.S. Route 41 (Skokie Highway), on the east by Lake Michigan, on the north by the City of North Chicago, and on the south by the Veterans Administration (VA) Hospital and the Shore Acres Country Club (Figure 2-1).

2.2 INSTALLATION RESTORATION PROGRAM

In 1980, the Department of Defense (DOD) initiated the Installation Restoration (IR) Program for investigating and remediating hazardous waste disposal sites at military installations and instructed the services to comply with program guidelines. This work is part of the Navy's IR Program (formerly known as the Navy Assessment and Control of Installation Pollutants (NACIP) Program) designed to identify contamination of Navy and Marine Corps lands/facilities resulting from past operations and to institute corrective measures as needed. This IR Program consists of four phases (Naval Facilities Engineering Command, 1991):

- I. Preliminary Assessment (PA) - formerly known as an Initial Assessment Study (IAS) under the NACIP Program, determines the seriousness of the hazardous substance(s) release or threat of release. The purpose of the PA is to evaluate the release or potential release of hazardous substances and to recommend additional response action at the site. As a result, no action may be taken if available data indicate that there is no threat or potential threat to public health or the environment. Alternatively, the best response action may be an immediate removal of the threat or potential threat. The PA therefore, establishes a priority for scheduling a SI by characterizing a site.
- II. Site Inspection (SI) - augments the information collected in the PA and:
 - Eliminates from further consideration those releases that pose no threat or potential threat to public health or the environment.
 - Collects or develops additional data, as appropriate, to evaluate the release pursuant to the HRS.
 - Collects data, as appropriate, beyond that required to score and list the release pursuant to the HRS, in order to better characterize the release for more effective and rapid initiation of a RI/FS.



SOURCE:
INITIAL ASSESSMENT STUDY
ROGERS, GOLDEN, HALPERN, 1986

GENERAL LOCATION MAP

GREAT LAKES NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS

FIGURE 2-1

Donohue ENGINEERS
ARCHITECTS
SCIENTISTS

- III. Remedial Investigation/Feasibility Studies (RI/FS) - performs extensive on-site investigations including physical and analytical monitoring to quantify the extent of the problem and to develop alternatives for possible corrective action.
- IV. Remedial Action (RA) Plans - evaluates and implements corrective projects to control and mitigate confirmed contamination.

2.3 PAST INVESTIGATION AT GREAT LAKES NTC

In 1986, the Navy conducted an IAS at the Great Lakes NTC. Based on information from historical records, aerial photographs, field inspections, and personnel interviews, a total of 14 potentially contaminated sites were identified. Each of the sites were evaluated with respect to contaminant characteristics, migration pathways, and pollutant receptors.

The IAS concluded that, while none of the sites posed an immediate threat to human health or to the environment, seven sites warranted further investigation under the NACIP program to assess potential long-term impacts. A Confirmation Study, involving sampling and monitoring of the seven sites, was recommended to either confirm or refute the presence of the suspected contamination and to better define the extent of any problems that may exist. The seven sites recommended for Confirmation Studies were:

- Site 1, Golf Course Landfill
- Site 4, Fire Fighting Training Area
- Site 5, Transformer Storage "Boneyard"
- Site 6, Mainside Transformer Storage Area
- Site 7, RTC Silk Screening Shop
- Site 8, Exchange Service Station
- Site 12, Harbor Dredge Spoil Area

Sites 6 and 8 have been eliminated from further study. An expedited study was performed at Site 6 and it was concluded that the site contained no PCBs. No further action was taken at the site and an easement was granted to the state to construct a highway across the site. An underground storage tank (UST) and contaminated soil at Site 8 were removed and disposed of in 1991. A RI Verification Step Study was initiated at the remaining sites in 1987. Work was not completed on this effort due to laboratory problems that did not produce defensible or accurate data. Sites 4 and 12 have been designated as requiring a RI/FS based on existing information.

The remaining three sites (Figure 2-2) will be investigated as part of this SI. These three sites are:

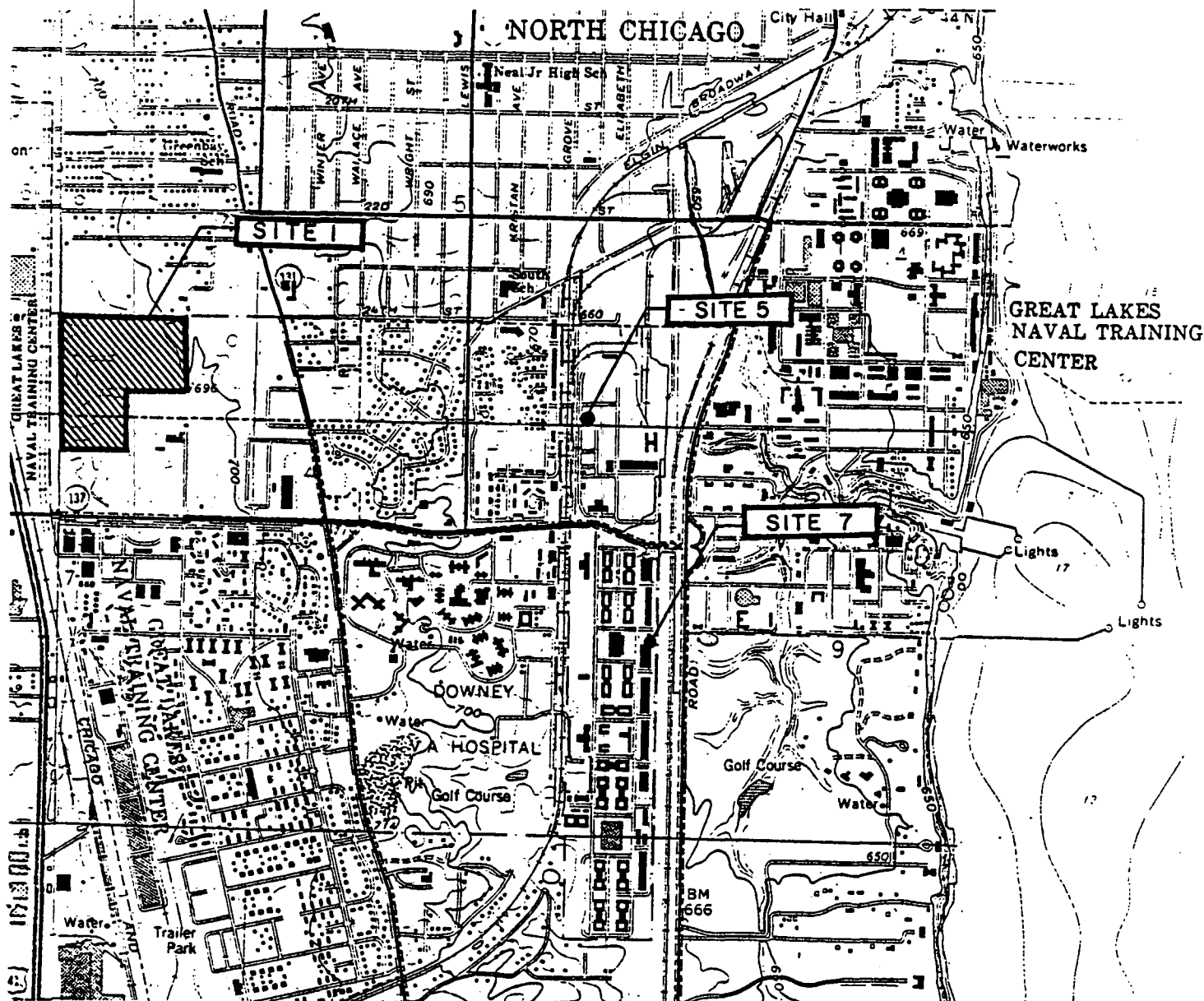
- Site 1, Golf Course Landfill - Underlying at least 50 acres of the present golf course, the landfill was operated as a trenching/burning operation between 1942 and 1967 for an estimated 1.5 million tons of materials. Types of waste reportedly included: domestic refuse; sewage sludge; petroleum, oil, and lubricants (POLs); solvents; coal ash; and material contaminated by PCBs (Rogers, Golden & Halpern, 1986).
- Site 5, Transformer Storage Boneyard - A 2-acre site reportedly used between 1945 to 1985, primarily for the storage of out-of-service transformers including some filled with PCB-containing oil. Other stored items included lead-insulated cable, heavy equipment, and miscellaneous scrap metal and materials (Rogers, Golden & Halpern, 1986).
- Site 7, RTC Silk Screen Shop - The shop used a variety of materials, including ink, paint, water- and oil-based lacquers, enamels, mineral spirits, acetone, thinners, and photographic emulsions. Until 1985, washwater from the finishing of silk screen, possibly contaminated with some of these products, was allowed to drain onto the ground outside the building from a pipe draining the shop's washwater booth (Rogers, Golden & Halpern, 1986).

Dames & Moore (1991) conducted a RI Verification Step (Site Inspection) at Sites 1, 4, 5, 7, and 12 in 1988 and 1989. The objective of the project was to collect sufficient quantitative environmental data to either (1) verify the presence of hazardous or toxic waste and supply planning for an expanded monitoring program, or (2) recommend no further action where such materials were not found.

The RI Verification Step included the installation of 13 monitoring wells at Sites 1 and 4, the collection of 26 groundwater samples, 12 surface water samples, 58 soil samples and 42 soil and sludge samples.

Problems were encountered with the laboratory used to perform the sample analyses for this project, however. The laboratory (metaTrace, Inc., Earth City, Missouri) went bankrupt and was not able to produce sufficient QA/QC data to allow validation of the sample analytical data. Consequently, none of the data from the samples collected by Dames & Moore are usable. Dames & Moore issued "Technical Memorandum on the RI Verification Step" in September 1991. This technical memorandum documents the work performed at Sites 1, 4, 5, 7, and 12.

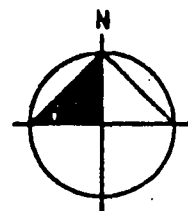
RP/19WPAD/AA2



LEGEND

● SITE LOCATION

SOURCE:
USGS 7.5 MINUTE QUADRANGLE
WAUKEGAN, ILLINOIS, 1960
PHOTOREVISED 1972 AND 1980



0 1000 2000

SCALE: FEET
SCALE IS APPROXIMATE

SITE LOCATION MAP

FIGURE 2-2

**GREAT LAKES NAVAL TRAINING CENTER
GREAT LAKES, ILLINOIS**

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3.0 SITE INSPECTION OBJECTIVES AND PROJECT PLAN PREPARATION

3.1 OBJECTIVES

The objectives of the SI are to determine the presence or absence, as well as the order of magnitude, of specific toxic or hazardous contaminants identified in the preliminary assessment, and of other contaminants which may be present in hazardous concentrations. Additional data will be collected for scoring the site according to the HRS. The results of the SI will contain an evaluation of contamination found and site-specific recommendations regarding whether or not to proceed with a RI/FS.

3.2 PROJECT PLAN PREPARATION

Preparation of the Work Plan, FSP, QAPP, and HASP, was based upon review and consideration of data, observations, and discussions associated with the following activities:

- The Navy issued CTO #0019 on August 2, 1991 authorizing Donohue to prepare an Implementation Plan for a SI Work Plan. Donohue prepared the plan and submitted it to the Navy on September 4, 1991.
- Copies of the previous investigative reports were provided to Donohue in September 1991. These included the IAS prepared by Rogers, Golden & Halpern, dated March 1986; RI Verification Step Work Plan by Dames & Moore, dated October 1987; and Draft Technical Memorandum on the RI Verification Step by Dames & Moore, dated September 1991.
- A site visit was conducted on October 22, 1991, by the Navy and Donohue representatives.
- Project files kept at the Great Lakes NTC were reviewed by Donohue personnel on October 22-23, 1991. During the file review, emphasis was placed on the files relevant to the three aforementioned sites of concern. The site visit/file review Technical Memorandum No. 1 was subsequently submitted to the Navy.
- A project scoping meeting with the Navy was held on November 12, 1991. The Donohue project team presented the project approach and proposed scope of the SI. The Navy Remedial Project Manager (RPM) and other representatives commented on the approach and scope of work which resulted in some modifications. A summary of this project meeting was submitted in Technical Memorandum No. 3.

DRAFT

The Draft SI Work Plan has been developed based on screening the existing site information. Also, the groundwater monitoring wells installed during the RI Verification Step will be used for collecting groundwater samples. Therefore, no additional monitoring wells will be installed in this phase of the investigation.

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4.0 PROPOSED SITE INSPECTION TASKS

4.1 TASK 1 - PROJECT PLANNING

The project planning task includes activities from project initiation through completion of the Final SI Report. The following project planning activities have been completed:

- Preparation of the draft SI project plans including the Work Plan, QAPP, FSP, and HASP.
- Site visit
- Scoping meetings

4.2 TASK 2 - DATA COLLECTION

The SI at the Golf Course Landfill, the PCB Transformer Boneyard, and the RTC Silk Screen Shop will include the following office and field activities: subcontracting, mobilization and demobilization for the collection of a minimum of 18 groundwater samples, 6 surface water samples, 6 sediment samples, 14 soil samples, 4 background soil samples, and 6 landfill gas samples, and gathering additional data required to score these sites under the HRS model. The field activities are described in detail in the FSP.

The following background samples will be collected:

- Four soil samples from areas on the base not impacted by past or current industrial activities, waste disposal or spills.
- One surface water sample and one sediment sample will be collected north of Site 1 from Skokie Ditch if the ditch is present in this area.
- Groundwater samples from monitoring wells upgradient of the landfill.

Samples collected during the SI at Sites 1, 5, and 7 will be analyzed for Target Compound List (TCL) compounds and Target Analyte List (TAL) analytes. The TCL/TAL contains the following suites of analytes: volatile organic compounds, base/neutral/acid extractable compounds, pesticides/PCBs, and metals/cyanide. This full scan of analyses is necessary because the existing chemical database for these sites is not adequate to justify eliminating individual suites of analytes.

Drilling activities will include the completion of two soil borings to the water table at Site 5 and Site 7; collection of surface and subsurface soil samples; drumming of drill cuttings; decontamination of the drill rig and sampling equipment; and collection of decontamination fluids.

Site-specific and media-specific data collection activities are described in the following sections.

4.2.1 Site 1 - Golf Course Landfill

4.2.1.1 Groundwater

Two rounds of groundwater samples (high and low precipitation periods) will be collected from nine existing monitoring wells at the Golf Course Landfill. The nine monitoring wells to be sampled are:

| | |
|--------|--------|
| MW1-1 | MW1-6A |
| MW1-2 | MW1-7B |
| MW1-3 | MW1-8 |
| MW1-4A | MW1-9 |
| MW1-5 | |

Each groundwater sample will be analyzed for TCL compounds, TAL analytes (dissolved and total metals), and water quality parameters.

Donohue will collect the following information required to score the HRS model groundwater migration pathway for the Golf Course Landfill:

- Published site and regional geologic information.
- Well logs within 4 miles of the site.
- Information on usage and number of persons served by groundwater wells within 4 miles of the site.
- 1990 Census population data (if not available, 1980 Census data).
- Section 1428 of the Safe Drinking Water Act.

4.2.1.2 Surface Water and Sediment

Two rounds of surface water and sediment samples will be collected from Skokie Ditch concurrent with groundwater sampling. Four surface water and four sediment samples will be collected from the ditch each round, including one background surface water sample and one background sediment sample to be collected upgradient from the Golf Course Landfill, if possible.

In addition, if a storm sewer pathway from the landfill to Pettibone Creek can be established, one sample will be collected from material accumulated near a likely entry point to the storm sewer system (e.g., a storm grate).

The surface water samples will be analyzed for TCL compounds, TAL analytes (total metals), and water quality parameters. The sediment samples will be analyzed for TCL compounds and TAL analytes.

Donohue will collect the following information required to score the HRS model surface water migration pathway for the Golf Course Landfill:

- Surficial geology of drainage area.
- Locations of drinking water intakes in Lake Michigan within 15 miles of site.
- 1990 Census population data (if not available, 1980 Census data).
- Information required by HRS model regarding irrigation, livestock watering, commercial food preparation, and recreation areas.
- Information required by HRS model regarding sensitive environments.
- Published site and regional geologic information.

4.2.1.3 Soil

Six surface soil samples will be collected immediately beneath the golf course vegetative cover. Also, four background surface soil samples will be collected off-site in areas where industrial activities or waste disposal/spills are not known to have occurred. These four samples will be considered background surface soil samples for the Golf Course Landfill, the PCB Transformer Boneyard, and the RTC Silk Screen Shop. The surface soil samples will be analyzed for TCL compounds, TAL analytes, and grain size.

Donohue will collect the following information required to score the HRS model soil exposure pathway for the Golf Course Landfill:

- Distances to the nearest residence, school, workplace, day care facility, and terrestrial sensitive environment.
- 1990 Census population data (if not available, 1980 Census data).
- Recreational use of the site.
- Site accessibility.

- Information required by the HRS model regarding irrigation, livestock watering, commercial food preparation, and recreation areas.

4.2.1.4 Landfill Gas

Six landfill gas samples will be collected adjacent to the six surface soil sample locations. The landfill gas samples will be analyzed for TCL volatile organic compounds (VOCs).

Donohue will collect the following information required to score the HRS model air migration pathway for the Golf Course Landfill:

- 1990 Census population data (if not available, 1980 Census data).
- Commercial agriculture, commercial forestry, or designated recreation areas within 0.5 miles of the site.
- Sensitive environments within 4 miles of the site.

4.2.2 Site 5 - PCB Transformer Boneyard

4.2.2.1 Groundwater

Monitoring wells do not currently exist at the PCB Transformer Boneyard. Because subsurface soil sample chemical data do not exist for the site, it is considered premature to install monitoring wells during the SI.

One soil boring will be placed to the water table during the SI at this site (refer to Section 4.2.2.3). If subsurface soil samples collected from this boring indicate subsurface contamination is present, monitoring wells may be installed during a RI/FS at the site.

Donohue will gather the HRS model information listed in Section 4.2.1.1 as relevant to the PCB Transformer Boneyard.

4.2.2.2 Storm Sewer

If a storm sewer pathway from the PCB Transformer Boneyard to Pettibone Creek can be established, one sample will be collected from material accumulated at the likely point of entry to the storm sewer system (e.g., a sewer grate). The sample will be analyzed for TCL compounds and TAL analytes.

Donohue will collect the HRS model information listed in Section 4.2.1.2 as relevant to the PCB Transformer Boneyard.

4.2.2.3 Soil

Five surface soil samples will be collected from 0 to 2 feet in depth. Also, one soil boring will be placed to the water table to collect site geologic and hydrogeologic data and to collect surface and subsurface soil samples for chemical analyses. These soil samples will be collected from the 0- to 2-, 2- to 4-, and 4- to 6-foot depth intervals, or to the water table, whichever is shallower.

The soil samples will be analyzed for TCL compounds and TAL analytes. In addition, the six surface soil samples (0 to 2 feet) will be tested for grain size.

Donohue will collect the HRS model information listed in Section 4.2.1.3 as relevant to the PCB Transformer Boneyard.

4.2.2.4 Air

Air samples will not be collected at this site during the SI.

Donohue will collect the HRS model information listed in Section 4.2.1.4 as relevant to the PCB Transformer Boneyard.

4.2.3 Site 7 - RTC Silk Screen Shop

4.2.3.1 Groundwater

Monitoring wells do not currently exist at the RTC Silk Screen Shop. Because subsurface soil sample chemical data do not exist for the site, it is considered premature at this time to install monitoring wells.

One soil boring will be placed to the water table during the SI at this site (refer to Section 4.2.3.3). If subsurface soil samples collected from this boring indicate subsurface contamination is present, monitoring wells may be installed during a RI/FS at the site.

Donohue will collect the HRS model information listed in Section 4.2.1.1 as relevant to the RTC Silk Screen Shop.

4.2.3.2 Storm Sewer

If a storm sewer pathway from the RTC Silk Screen Shop to Pettibone Creek can be established, one sample will be collected from material accumulated at the likely point of entry to the storm sewer system. The sample will be analyzed for TCL compounds and TAL analytes.

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Donohue will collect the HRS model information listed in Section 4.2.1.2 as relevant to the RTC Silk Screen Shop.

4.2.3.3 Soil

Two surface soil samples will be collected from 0 to 2 feet in depth. Also, one soil boring will be placed to the water table to collect site geologic and hydrogeologic data and to collect surface and subsurface soil samples for chemical analyses. These soil samples will be collected from the 0- to 2-, 2- to 4-, and 4- to 6-foot depth intervals, or to the water table, whichever is shallower.

The soil samples will be analyzed for TCL compounds and TAL analytes. In addition, the three surface soil samples (0 to 2 feet) will be tested for grain size.

Donohue will collect the HRS model information listed in Section 4.2.1.3 as relevant to the RTC Silk Screen Shop.

4.2.3.4 Air

Air samples will not be collected at this site during the SI.

Donohue will collect the HRS model information listed in Section 4.2.1.4 as relevant to the RTC Silk Screen Shop.

4.3 TASK 3 - SAMPLE ANALYSIS

This task includes chemical and physical analysis of samples collected during the SI at the Golf Course Landfill, the PCB Transformer Boneyard, and the RTC Silk Screen Shop. As indicated in the FSP and QAPP, samples collected during the SI will be analyzed by a contract laboratory approved by the Navy. Analytical data generated from this task will be included in the SI report appendices.

The QAPP will be consistent with the QA/QC guidelines "Sampling and Chemical Analysis Quality Assurance Requirements For the Navy Installation Restoration Program," NEESA 20.2-047B.

4.4 TASK 4 - DATA VALIDATION AND EVALUATION

4.4.1 Data Validation

Data validation will be performed by a Donohue chemist in accordance with CLEAN data validation procedures established by HALLIBURTON-NUS and the Navy. The data validation procedures are discussed in detail in Section 9.2 of the QAPP.

4.4.2 Data Evaluation

Data evaluation will be initiated after sample analysis and data validation are performed. The results of this task will be incorporated into the SI report. The specific subtasks of data evaluation are described in the following subsections.

4.4.2.1 Data Reduction/Tabulation

Tables will be developed to exhibit and summarize the analytical chemical and physical data. Contaminant levels may be plotted on site maps to depict contaminant distributions.

4.4.2.2 Analytical Chemical Data Evaluation

Surface/subsurface soil analytical data will be evaluated. These data will be statistically compared to background chemical concentrations; exceedances will be identified. The statistical methodology to be followed to compare background soil data to on-site soil data is as follows. First, the mean and standard deviation of the four background soil samples will be determined. The background data set will be checked for outliers; any outliers will be discarded from the data set. An upper limit background concentration for each analyte will be calculated by adding three standard deviations to the sample mean. This upper limit background concentration will then be compared to the on-site soil data. Any on-site points which exceed the upper limit background concentration will be considered contaminated.

Site 1 Skokie Ditch sediment data will be qualitatively compared (not statistically compared) to background Skokie Ditch data.

Groundwater analytical data from Site 1 Golf Course Landfill will be evaluated. Upgradient and downgradient wells will be compared, and changes in water chemistry will be noted. Also, groundwater chemical data will be qualitatively compared to Maximum Contaminant Level (MCL) standards and to secondary MCLs to identify exceedances.

Surface water analytical data will be evaluated. The on-site chemical data will be qualitatively compared to background Skokie Ditch data, to Ambient Water Quality Criteria, and to IEPA Title 35, Subtitle C-Water Pollution criteria.

4.4.2.3 Hydrogeologic Data Evaluation

A water table contour map will be prepared for each round of groundwater samples collected at Site 1.

The analytical data will be reviewed to evaluate contaminant distributions and the completeness of the database. The results will be reviewed with the Navy and Illinois Environmental Protection Agency (IEPA) to determine whether the database is sufficient or whether additional sampling is required. If additional sampling is required, a technical memorandum will be prepared to propose the scope of the additional work.

4.5 TASK 5 - SITE INSPECTION REPORT

A Draft SI Report will be prepared to summarize the office and field activities performed, data collected, and conclusions and recommendations regarding the presence or absence of contamination at each site. Comments received from the Navy will be addressed to complete the Final SI Report.

The following items will be included in the SI report:

- A brief restatement of the appropriate findings and conclusions of the PA.
- Individual site-specific maps showing the sampling sites and locations of suspected contaminant sources.
- A site-specific narrative describing the rationale used in the selection of analytical parameters and sampling objectives.
- A detailed description of field investigations and analytical findings with associated QA/QC documentation. The tabulation of criteria, data, calculations, etc., which are performed but not included in the report will be assembled as appendices.
- A table listing regional average levels of inorganics in soil.
- An explanation of the methodology and results of statistical analysis of soil sample data.
- Soil boring logs and associated hydrogeological and QC data.

- Well purging and sampling logs and associated field measurements.
- A site-specific assessment of actual/potential migration of contaminants. The samples at Site 1 are located to assess whether contaminants are present at the site, and if so, whether they are migrating from this site via the surface water, storm sewer, groundwater or air pathways. The samples proposed at Sites 5 and 7 are located to assess whether contaminants are present at these sites, and if so, whether they are migrating from these sites via the storm sewer or groundwater pathways.
- Safety inspection logs and associated documentation.
- A site-specific comparison of detected contaminant concentrations versus national and local regulatory standards, if applicable.
- Site-specific detailed recommendations with supporting documentation for the termination or continuation of the IR study.

4.6 TASK 6 - PROJECT MANAGEMENT

The Donohue Project Manager, Mansour Ghiasi, P.E., will be responsible for implementing the SI and for coordinating and monitoring daily project activities. Responsibilities include:

- Serve as the principal contact with the Navy RPM.
- Ensure the project is appropriately staffed.
- Monitor budget and schedule, identify variances, and take appropriate corrective action.
- Provide overall project direction and resolve problem areas.
- Ensure project objectives and requirements are achieved.

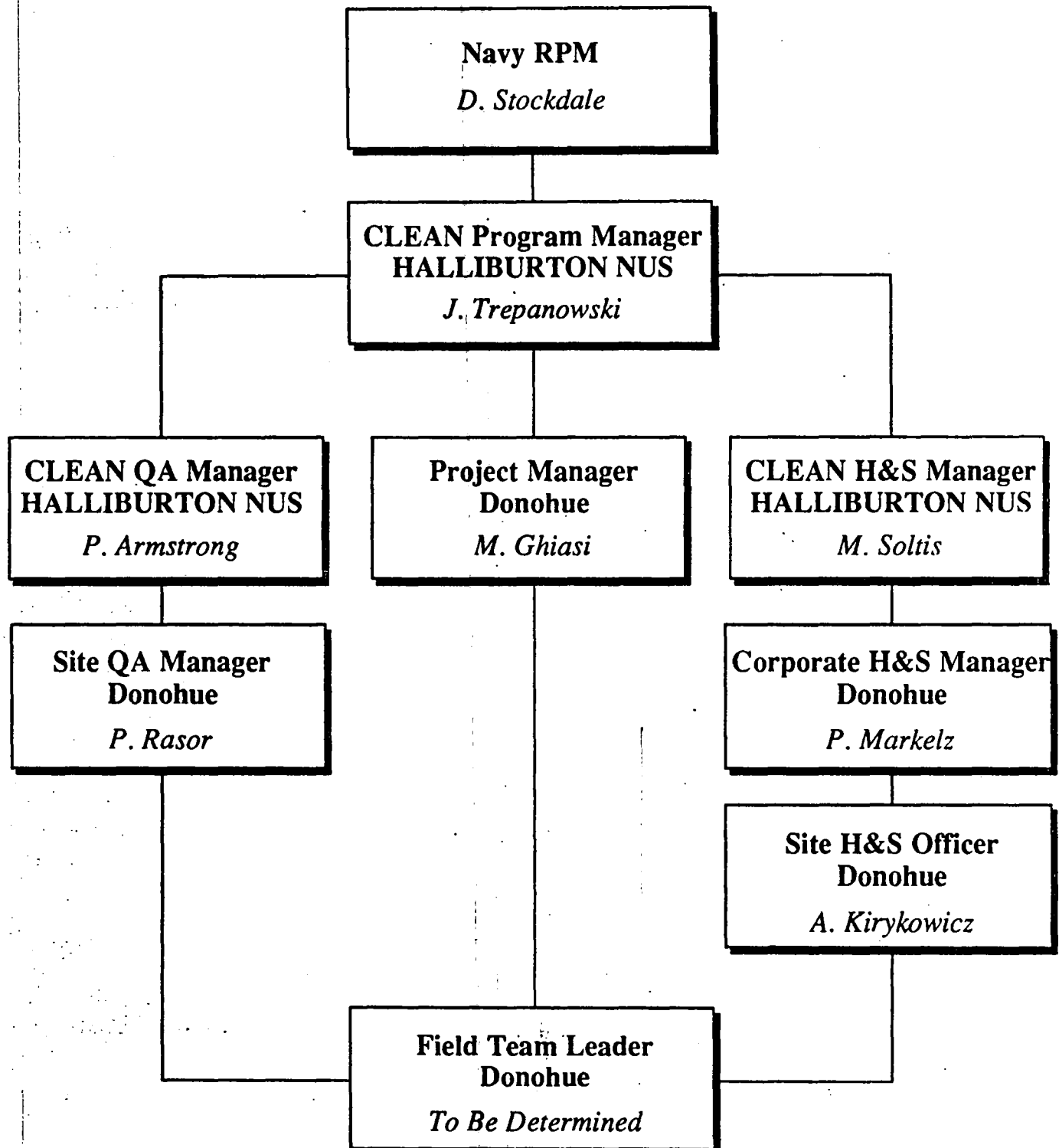
An organizational chart for the Great Lakes NTC project is presented in Figure 4-1.

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Figure 4-1

**Organizational Chart
Great Lakes Naval Training Center
Great Lakes, Illinois**



5.0 DATA QUALITY OBJECTIVES

Data Quality Objectives (DQOs) are based on the concept that different data uses may require different levels of data quality. Data quality is defined as the degree of certainty of a data set with respect to precision, accuracy, reproducibility, comparability, and completeness. DQOs are qualitative and quantitative statements specifying the required quality of data required to support SI activities. They also support engineering alternative evaluation and selection decisions.

The five levels of data quality are (EPA, 1987):

1. Screening (DQO Level 1): This provides the lowest data quality but the most rapid results. It is often used for health and safety monitoring at the site, initial site characterization to locate areas for subsequent and more accurate analyses, and for engineering screening of alternatives (bench-scale tests). These types of data included those generated on-site through the use of HNu, pH, conductivity, and other real-time monitoring equipment.
2. Field Analyses (DQO Level 2): This provides rapid results and better quality than in Level 1. Analyses include mobile lab generated data.
3. Engineering (DQO Level 3): This provides an intermediate level of data quality and is used for site characterization. Engineering analyses may include mobile laboratory generated data and some analytical lab methods (e.g., laboratory data with quick turnaround used for screening but without full quality control documentation).
4. Confirmational (DQO Level 4): This provides the highest level of data quality and is used for purposes of risk assessment, engineering design, and cost analyses. These analyses require full CLP analytical and data validation procedures in accordance with EPA recognized protocols.
5. Non-Standard (DQO Level 5): This refers to analyses by non-standard protocols, for example, when exacting detection limits or analysis of an unusual chemical compound is required. These analyses often require method development or adaption. The level of QC is usually similar to DQO Level 4 data.

Donohue will generate DQO Level 1, 3, 4, and 5 analytical data during the SI at the Great Lakes NTC. The DQO Level 1 data to be generated include field HNu readings, and measurements of pH, temperature, specific conductivity and turbidity during groundwater and surface water sampling.

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Water quality analysis of water samples will be performed by DQO Level 3.

Laboratory analytical testing of environmental samples will be performed by a contract laboratory to obtain Level 4 data. Detection limits for the individual components and QA/QC parameters to meet the data requirements are specified in the QAPP. Level 4 data will be generated according to NEESA Level D.

Physical properties of the soil such as grain size analysis will be Level 5 data.

The analytical methodology used by the contract laboratory will be adequate to satisfy the DQO requirements for this SI. For instance, the Contract Required Quantitation Limit (CRQL) for groundwater samples will be, at a minimum, as low as MCLs.

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6.0 PROJECT SCHEDULE




A tentative schedule for the SI at Sites 1, 5, and 7 is presented on the next page. The schedule has been developed to accomplish the proposed SI in an efficient and cost-effective manner.

The schedule is based on the following assumptions:

- Navy will approve the Final SI Work Plan and issue a CTO to conduct the SI within 4 weeks of Final SI Work Plan submittal.
- Donohue will mobilize for field activities, including subcontracting, in 6 weeks.
- A 6-week turnaround time for sample analysis has been assumed. Validation of data by a SEC Donohue chemist will take 1 week.
- The health and safety personal protective requirements are Level D with possible upgrade to Level C.
- Two rounds of groundwater and surface water sampling will be conducted at Site 1. For scheduling purposes, it is assumed that Round 1 will take place in August 1992, and Round 2 will take place in April 1993.

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| LINE | ACTIVITY DESCRIPTION | ORIG DUR | EARLY START | EARLY FINISH | 1991 | | 1992 | | | | | | | | | | | | 1993 | | | | | | | | | | | | | | | | | | | | | |
|------|--|----------|-------------|--------------|-------|-------|------|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | | | | | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | Prepare/Submit Rough Draft Documents | 30 | 12NOV91A | 23DEC91A | ===== | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | Oral Presentation | 1 | 8JAN92A | 8JAN92A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | Navy Review/Comments | 25 | 24DEC91A | 24FEB92A | | ===== | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | Response to Comments | 14 | 25FEB92A | 13MAR92A | | | | | ===== | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | Prepare/Submit Draft Documents | 34 | 25FEB92A | 10APR92 | | | | | ===== | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | Oral Presentation To Tech Rev. Committee | 1 | 17APR92 | 17APR92 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 70 | Navy & IEPA Review/Comments | 30 | 13APR92 | 22MAY92 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 80 | Response to Comments | 15 | 25MAY92 | 12JUN92 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 90 | Prepare/Submit Final Documents | 25 | 25MAY92 | 26JUN92 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | Navy Approval/Issue CTO | 20 | 29JUN92 | 24JUL92 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 110 | Mobilization | 30 | 27JUL92 | 45SEP92 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 120 | Field Activities | 14 | 8SEP92 | 25SEP92 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 130 | Laboratory Analysis | 30 | 28SEP92 | 6NOV92 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 140 | Data Validation | 5 | 9NOV92 | 13NOV92 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 150 | Data Entry | 5 | 16NOV92 | 20NOV92 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 160 | Field Activities Phase II | 10 | 5APR93 | 16APR93 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 170 | Laboratory Analysis Phase II | 30 | 19APR93 | 28MAY93 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 180 | Data Validation Phase II | 5 | 31MAY93 | 4JUN93 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 190 | Data Entry Phase II | 5 | 7JUN93 | 11JUN93 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 200 | Prepare/Submit Draft SI Report | 20 | 14JUN93 | 9JUL93 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 210 | Navy Review/Comment | 20 | 12JUL93 | 6AUG93 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 220 | Prepare/Submit Final SI Report | 20 | 9AUG93 | 3SEP93 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

 Activity Bar/Early Dates
 Critical Activity
 Progress Bar

DONOHUE - PROJECT SCHEDULE DRAFT SITE INSPECT. WORK PLAN SITES 1, 5 AND 7

Sheet 1 of 1

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| Date | Revision | Checked | Approved |
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7.0 REFERENCES

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